

ABSTRACT

A process for removing unreacted ammonia from an effluent of a catalyst bed used in a hydrocarbon ammoxidation reaction is provided. The process includes a step of providing a fluidized bed reactor. The reactor includes the catalyst bed for reacting ammonia and hydrocarbons therein. The reactor also includes a dilute phase of the catalyst bed disposed above the catalyst bed. The reactor further includes a set of internals disposed at least partially within the dilute phase of the catalyst bed. The reactor additionally includes an inlet of a first-stage cyclone separator disposed above the set of internals. The process also includes a step of removing the unreacted ammonia from the effluent of the catalyst bed by passing the effluent through the set of internals. The ammonia and hydrocarbons present in the effluent contact the dilute phase of the catalyst bed and react therein.